REMARKS

Claims 1-54 are pending, of which Claims 1, 13, 25, 26, 38, and 49 are independent. Claims 1, 3-8, 10-13, 15-19, 22-26, 28-31, 33, 35-38, 40-44, 47-49 are amended and new Claims 50-54 have been added by the present amendment to claim the invention more distinctly. All claims have been rejected under 35 U.S.C. §102. For the reasons discussed below, all claims are in condition for allowance.

35 U.S.C. §102 Rejections

Claims 1-49 have been rejected under §102 based on U.S. Patent No. 5,400,604 to Häfner et al. This rejection is respectfully traversed.

For explanation, but without limitation to the claims, certain embodiments will be described. An approach for monitoring the fullness of a cryopump measures when the adsorption capacity of the cryopump is reached. This is achieved by mounting an ion gauge or other total pressure gauge on the pump vessel with restricted access to an inner pump volume, which contains the adsorbent for the non-condensable gases. The gauge sensor may be connected to a tube or duct leading to the central core of the pump where the adsorbing charcoal is located. Because of its location in the pump, the sensor remains in contact with non-condensable gases; however, it is shielded from other gases such as nitrogen, argon, oxygen, or water vapor. In particular, the surfaces holding the charcoal are shielded from these other gases by the highly efficient condensation process. As a result, the pressure measured at this location of the pump reflects the pressure of only the non-condensable gases in the pump.

Amended independent Claim 1 is directed to an approach for monitoring fullness of a cryopump. A pressure gauge senses pressure behind a condensing surface in an inner vacuum region of the cryopump. The inner vacuum region includes an adsorbent for adsorbing non-condensable gases. The sensed pressure is substantially less than the pressure in an outer vacuum region outside of the condensing surface. An adsorption capacity for the adsorbent is determined

using the sensed pressure.

By using a gauge sensor, which is nominally sensitive to all gases, to sense pressure in an inner region of the cryopump where only non-condensable gases are present, the hydrogen adsorption capacity of the adsorbent in the inner vacuum region can be measured. For instance, a rise in pressure during recovery to a predetermined level can signify that the pump has reached its adsorption capacity. In addition, all the non-condensable gases can be monitored at once.

By way of contrast, Häfner is generally directed to an approach to regeneration that does not require the use of a regeneration gas, such as nitrogen. Häfner discusses using pressure sensors to monitor the pressure during regeneration. In particular, Häfner teaches to use a pressure sensor (36) to detect pressure in the insulated vacuum region (25), and to use a pressure sensor (37) to detect pressure in the pump interior (9). These pressure sensors discussed by Häfner detect the total pressure in the insulated vacuum region and in the pump interior. In particular, sensor (37) would detect the higher, outer pressure of the pump because there is no duct or other mechanism to isolate the sensor to the inner low pressure region.

Conversely, the present invention requires sensing pressure in the inner vacuum region behind a condensing surface of a cryopump. At this location in the pump, the present invention is able to measure the pressure of non-condensable gases independent of the actual chamber or pump total pressure. Häfner, however, does not discuss or allow for *sensing pressure behind a condensing surface of a cryopump* as claimed. As such, the sensed pressure in the cryopump of the Häfner type is not *substantially less than the pressure in an outer vacuum region outside of the condensing surface,* as required by the claimed invention.

Furthermore, Claim 1 further requires *determining an adsorption capacity of the adsorbent using the measured pressure*, and this inventive concept is not disclosed by Häfner. In fact, Häfner does not even discuss an approach for determining the adsorption capacity of the adsorbent.

Therefore, it is respectfully submitted that the present invention set forth in Claim 1 is not disclosed by Häfner. Independent Claims 13, 25, 26, 38, and 49 included similar limitations to those set forth in Claim 1, and for reasons similar to those set forth in Claim 1, independent Claims 13, 25, 26, 38, and 49 are also not disclosed by Häfner.

For the reasons set forth above, the limitations set forth in dependent Claims 2-4, 6-8, 10, and 12 that depend from independent Claim 1, dependent Claims 14-19 and 22-24 that depend from independent Claim 13, dependent Claims 27-2-, 31-33, 35, and 37 that depend from independent Claim 26, and dependent Claims 39-41, 43, 44, and 47 that depend from independent Claim 38 are not disclosed by Häfner.

As such, it is respectfully requested that the §102 rejection to Claims 1-49 based on Häfner be reconsidered and withdrawn.

New Claims

New dependent Claims 50-54 are added to the application by the present amendment. For reasons similar to those discussed above, the limitations in new dependent Claims 50-54 are not disclosed by Häfner. In addition, new dependent Claims 50-53 require that the pressure sensor measure the pressure of non-condensable gases without measuring the cryopump total pressure. The pressure sensors discussed Häfner do not have the ability to measure the pressure of non-condensable gases without measuring the cryopump total pressure. As such, Häfner does not disclose the requirements of new dependent Claims 50-53.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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